

IN THE DRAWINGS:

A new set of Figs. 7-10 are being submitted with this Amendment in response to the Examiner's request for additional figures reflecting the disclosure. The new Figs. 7-10 shows two additional embodiments of the device as originally described in the disclosure and add no new matter to the Application.

REMARKS

Claims 1-21 are in this application and are presented for reconsideration. By this Amendment, Applicant has amended claims 1-20, and added a new claim 21 and made various minor changes to the specification and claims to improve the clarity and style of this application and to address issues raised in the Office Action.

Applicant has added new claim 21 which includes subject matter similar to claim 4 and paragraph 0030 on page 11 of the specification. The new claim does not add any new matter to the application.

By this Amendment, the Applicant has amended the specification and several claims to overcome the Examiner's objections and respectfully makes assertions for overcoming the rejections of the outstanding Office Action dated August 29, 2005 in the following paragraphs.

Drawings

The drawings have been objected to under 37 CFR §1.83(a) for failing to show every feature of the invention specified in the claims. Specifically, wherein the compact units are provided on the inner side of the snorkel tube (claim 4) and a third compact unit (claims 14-17) must be shown or the feature(s) canceled from the claim(s).

In response, Applicant submits herewith an additional set of drawing sheets. This drawing is fully supported in paragraph 0030 starting at line 11 and ending at line 19 on page 11 of the original disclosure as well as claims 4 and 14-17. Applicant requests consideration of the drawings.

Specification

The disclosure has been objected to because, according to the Office Action, on page 8, line 5, "optronics unit 12" should be --optronics unit 13--.

In response, Applicant has amended the specification to address the above informality.

Claim Objections

Claims 1-20 are objected to because of the following informalities:

Regarding claims 1 and 20, the claims are objected to because they include items (e.g. "(travel at periscope depth)") enclosed within parentheses that are not reference characters corresponding to elements recited in the detailed description of the drawings. The Office suggests avoiding the usage of parentheses within the claims for items other than drawing reference characters so as to avoid confusion. In particular, the examiner suggests --during snorkeling travel at periscope depth--.

Further regarding claim 1, "the optical observation means" lacks antecedent basis and the dependent claims inherit the deficiencies of the claims from which they depend.

In response, Applicant has taken heed of the advices and made changes to the claims according to the suggestion. Applicant thanks the Examiner for the helpful suggestions for the claims.

Claim Rejections - 35 USC §103

Claims 1-2,4-6, 8, 14-1 5, 17 and 20 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the U.S. Pat. No. 6,002,648 to Ambs (the "Ambs '648" reference, hereinafter), in view of the U. S. Pat. No. 4,848,886 to Pratt (the "Pratt '886" reference, hereinafter).

The Ambs '648 reference discloses a seismic method and system for generating seismic source energy in marine geophysical operations. A slotted housing is moveable by the actuation of piezoelectric elements to generate high power, low frequency seismic source signals. When the piezoelectric elements are activated by electric power, displacement of such elements is enlarged by the slotted housing to generate a pressure pulse in the water. The invention permits single source pressure pulse generation having sufficient power and low frequency. The housing can be towed by a seismic vessel or can be integrated into a self-contained marine vehicle.

The Pratt '886 reference discloses a submarine periscope system with a mast head 7 with a casing 10 from which protrudes a shaft 16 carrying observation instruments which are protected by a housing 8. A seal arrangement 30 is provided at the interface between the casing 10 and shaft 16 which imposes low friction torque at water pressures within the operational depth range of the periscope system and permits the shaft 16 to rotate for azimuthal movement of the observation instruments. A rotary drive 14 is connected to the shaft 16 for this purpose. The seal arrangement 30 imposes high friction torque at water pressures outside the operational depth range of the periscope system and a water depth pressure valve disables the shaft rotary

drive to provide integrity of the seal arrangement outside the operational depth range. The mast head 7 is telescopically extendable by a hoist device 13 and does not penetrate the hull 2 of the submarine 3.

The Patent Office takes the position that the inventions of claims 1, 5, and 14 are disclosed by the figures 1 and 4a of the Ambs '648 reference except for an optical means connected to the snorkel tube, wherein the optical means is formed as a compact unit that comprises an optronics unit; and all of the compact units including short-travel drives, which are hydraulic cylinder drives. The Office then relies on the Pratt '886 reference to disclose this feature and further postulates that it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the optical means compact unit of the Pratt '886 reference to the snorkel device of the Ambs '648 reference to provide various observation when the submarine is submerged close below the water line as well as short travel drives to provide better hydrodynamics when the units are not needed.

It is Applicant's position that claims 1, 5, and 14 are not obvious over the Ambs '648 reference in view of the Pratt '886 reference. The present invention as claimed provides for a combination of features not taught by the prior art as a whole including the Ambs '648 reference and the Pratt '886 reference. For instance, there are several differences for the present invention as claimed.

First of all, the invention relates to a snorkel device which serves for the fresh air supply of the submarine, as disclosed on page 7 (lines 14-16). Neither Ambs '648 reference nor Pratt '886 reference describe a snorkel device with a snorkel tube for suction of fresh air.

The Ambs '648 reference discloses a marine seismic system within a slotted housing which is movable in the water. The Ambs '648 reference further describes a housing having a mast 16 which can incorporate a command and control communications antenna and a global positioning satellite antenna. The Ambs '648 reference, however, does not disclose a snorkel device.

Also, the Pratt '886 reference does not disclose a snorkel device, but a periscope system including an optical means arranged in the tower of a submarine. All being considered suggested by both the Ambs '648 reference and the Pratt '886 reference is a submarine with a mast in which antennas and optical means can be arranged. Therefore, the Ambs '648 reference and the Pratt '886 reference can not give any hint to a snorkel device according to claim 1, in which an optronic unit and a communication means are arranged on an extendible and retractable snorkel tube by the way of short travel drives.

In other words, Applicant has reviewed the Ambs '648 reference, and finds neither a teaching nor a suggestion of a snorkel device for a submarine in the Ambs '648 reference which includes movable optical observation means and a communication means. Therefore claim 1 cannot be anticipated by the Ambs '648 reference. The Examiner's attention is directed to column 3, lines 18 to 21 which is as follows:

"Apparatus 10 can be neutrally buoyant, powered or unpowered, controlled remotely or autonomously, and can be maneuverable horizontally or vertically, or laterally in water

22.

Housing 12 can comprise a single component having slot 26 along a line parallel to the longitudinal axis 28 of housing 12. Housing 12 is moved to produce the desired vibration by activating piezoelectric element attached inside of housing 12. "Piezoelectric" refers to the generation of electric polarity in dielectric crystals subjected to mechanical stress, and the generation of stress in such crystals when subjected to an applied voltage."

Thus, it is clear that neither the part 10 nor 12 can be a submarine. Further the element 16 is described as a mast. If it were true that the device according to the Ambs '648 reference disclosed a submarine, having a vibration sensitive piezoelectric element along with a crew would defeat the purpose of measuring seismic activity in the ocean.

Furthermore, an argument that the Pratt '886 reference suggests a communication means in a snorkel is not supported by the Pratt '886 reference. Applicant further notes that the Pratt '886 reference does not provide any suggestion or motivation which would lead a person of ordinary skill in the art to believe that such a periscope device could be combined with a seismic activity measuring device to create a snorkel having the features of the present invention as claimed. Instead, the Pratt '886 reference leads a person of ordinary skill in the art to a submarine with periscope and communication part without mentioning a solution for the snorkel, completely different from the present invention as claimed.

Regarding claims 2, 4, 6, 8, 15 and 17, the Office takes the position that the Ambs '648

reference discloses a device wherein the compact units are provided on the inner side of the snorkel tube (figs. 1 and 4); the snorkel tube itself being at least partly designed in a streamlined manner (fig. 1).

However, claims 2, 4, 6, 8, 15 and 17 depend on the independent claims and also include the combination of features contained therein. Thus, claims 2, 4, 6, 8, 15 and 17 also are not suggested by the references of the Ambs '648 reference and the Pratt '886 reference.

The combination of features not taught by the prior art provides several improved effect for the present invention as claim. For instance, the present invention as claimed has the advantage of providing a submarine which does not slow down on account of separate periscope and a separate antenna means. Further, due to reduced drag on the water, the size of the water signature is reduced, further reducing detection from an enemy.

Furthermore, Applicant finds no incentive in the Ambs '648 reference or the Pratt '886 reference which would lead a person to all the structural features of the communication unit and the optic unit being within the snorkel in a submarine. Claims above therefore cannot be obvious in view of the Ambs '648 reference and the Pratt '886 reference.

Regarding claim 20, the Office takes the position that the Ambs '648 reference discloses in figs. 1 and 4 a snorkel device (16) for a submarine (10), the device comprising: a movable snorkel tube (16, column 4, lines 12- 13) movably connected to the submarine (figs 1 and 4) and movable away from the submarine (column 4, lines 12-1 3); and a communication arrangement (44) connected to said snorkel tube, said communication arrangement including an communications unit (44) for above-water communication during snorkeling travel at

periscope depth of the submarine. The Office admits that the Ambs '648 reference fails to disclose the optical device connected to said snorkel tube, said optical device including an optronics short-travel drive connected to said snorkel tube and an optronics unit for above-water observation during snorkeling travel at periscope depth of the submarine, said optronics short-travel drive moving said optronics unit relative to said snorkel tube to a position with said optronics unit arranged beyond an end of said snorkel tube; and a communications short-travel drive connected to said snorkel tube, said communications short-travel drive moving said communications unit relative to said snorkel tube to a position with said communications unit arranged beyond said end of said snorkel tube. However, the Office relies on the Pratt '886 reference to disclose a snorkel device (1) for a submarine (3) including an optical device (39, see fig. 2) connected to the snorkel tube (16), said optical device including an optronics short-travel drive (10-14) connected to said snorkel tube (16) and an optronics unit (in 39, column 3, lines 17-20) for above-water observation during snorkeling travel at periscope depth of the submarine (Pratt, column 1, lines 7- 10), said optronics short-travel drive moving said optronics unit relative to said snorkel tube to a position with said optronics unit arranged beyond an end of said snorkel tube(column 3, lines 22-30) by further postulating that it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the optronics unit of Pratt to the snorkel device of Ambs to provide various observation when the submarine is submerged close below the water line (Pratt, column 1, lines 7-10) and it would have been obvious to one of ordinary skill in the art at the time the invention was made to add a short travel drive of Pratt '886 reference to the

communication unit of Ambs '648 reference for lowering to provide better hydrodynamics when the unit is not needed, such that said communications short-travel drive will move said communications unit relative to said snorkel tube to a position with said communications unit arranged beyond said end of said snorkel tube.

Applicant also disagrees with this assessment. The above two advantages each are due to the combination of features as claimed. The advantages can not be obtained from the prior art. The invention solves the problem of a large signature and slowing of the submarine itself. The prior art does not recognize these problems and directs the skilled artisan in a different direction. I.e., toward a seismic reader and a periscope-based solution. Thus, claim 20 is also not anticipated nor suggested by the prior art references as a whole including the Ambs '648 reference in view of the Pratt '886 reference.

Claims 3, 7, 9-13, 16 and 18-19 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Ambs '648 reference in view of the Pratt '886 reference as applied to claims 1, 2, 4, 5 and 17 above, and further in view of the DE 3637618 A1 to Wantig et al. (the "Wantig '618" reference, hereinafter). The Office admits that the Ambs '648 reference in view of the Pratt '886 reference fails to disclose the compact units provided on the outside of the snorkel tube; a common, streamlined casing is arranged around the snorkel tube and the compact units and relies on the Wantig et al. '648 reference in figs. 1-4, to suggest that a compact unit (antenna) provided on the outside of the snorkel tube (abstract); a common, streamlined casing (1) is arranged around the snorkel tube and the compact units by further postulating that it would have been obvious to one of ordinary skill in the art at the time the

invention was made to provide the units of Ambs in view of Pratt on the outside of the snorkel tube in a streamlined casing as suggested by Wantig et al. to provide more room for electronic cables, etc.

However, the Wantig '618 reference also clearly fails to teach and fails to suggest the combination of the invention. Absent a teaching or suggestion of the important feature of the invention, the combined references clearly do not direct the person of ordinary skill in the art toward the combination as claimed.

The present invention provides a different approach as compared to the Wantig et al. '618 reference and solves problems which Applicant has observed as noted above with regards to the speed of the submarine and the white waer tail. As the Wantig '618 reference fails to teach and fails to suggest the snorkel including at least the two units, it provides no teaching no suggestion to the person of ordinary skill in the art to provide the combination as claimed.

Furthermore, there must be some suggestion or teaching in the prior art as a whole which would lead the person of ordinary skill in the art to provide the combination as claimed. As the prior art as a whole fails to direct the person of ordinary skill in the art toward the claimed combination, the invention should be considered not anticipated, non-obvious and thus patentable.

Therefore, Applicant finds that the Wantig et al. '618 reference does not anticipate the current invention and there is no suggestion or motivation to use the teachings of the references to provide the combination as claimed.

Regarding claims 9- 13, 16 and 18- 19, Patent Office takes the position that the Ambs

'648 reference in view of the Pratt '886 reference as applied to claims 1, 2, 4, 5 and 17 above and Ambs '648 reference in view of the Pratt '886 reference and the Wantig et al. '618 reference as applied to claims 3 and 7 above disclose the claimed invention except for explicitly stating wherein the communication means includes a radio unit for HF, VHF, UHF or UHF-satcom radio communication or a combination thereof. The Patent Office relies on the Wantig et al. '618 reference to disclose the use of a UHF or VHF radio to conclude that it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the communication unit be a radio unit for UHF or VHF as suggested by Wantig et al. '618 reference as it is a reliable, commonly available radio unit.

Similar to other dependent claims, claims 9- 13, 16 and 18- 19 also depend on the independent claims and include the combination of features which define over the prior art of record. Thus, it is Applicant's position that these also are not suggested by the prior art of record.

As the prior art fails to suggest the combination of features as claimed, Applicant respectfully requests that the Examiner favorably consider the claims as now presented in view of the amended claims and in view of the discussion above. Applicant respectfully solicits allowance of this application.

It is applicant's position that all claims are now allowable. Should the Examiner determine that issues remain that have not been resolved by this response, the Examiner is requested to contact Applicant's representative at the number listed below.

Favorable action is requested.

Respectfully submitted
for Applicant,

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